Docket No. 199620US0X/rm

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Hiroshi YOKOGAWA, et al.

SERIAL NO: 09/708,657 GAU: 2882

FILED: November 9, 2000 EXAMINER: J. YUN

FOR: SUBSTRATE FOR LIGHT EMITTING DEVICE, LIGHT EMITTING DEVICE AND PROCESS FOR PRODUCTION OF LIGHT EMITTING DEVICE

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

■ The applicant(s) wish to make of record the references cited in the attached European Search Report listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.

☐ A check is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

☐ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the patent(s), together with a copy of the claims and drawings of the pending application(s) is attached along with PTO 1449.

☐ A check is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

■ Each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.

☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

■ Please charge any additional fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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Form PTO 1449 (Modified) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF REFERENCES CITED BY APPLICANT

ATTY DOCKET NO.	SERIAL NO.
199620US0X	09/708,657
APPLICANT	
Hiroshi YOKOGAWA, et al.	
FILING DATE	GROUP
November 9, 2000	2882

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA	5,313,485	05/17/94	R. A. HAMIL, et al.			
	AB	3,573,529	04/06/71	K. TOMII			
	AC	5,807,607	09/15/98	D. M. SMITH, et al.			
	AD	5,221,364	06/22/93	S. P. HOTALING			
	AE	4,849,673	07/18/89	N. J. WERRING, et al.			
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION YES	TRANSLATION NO
	AO	WO 99/04312	01/28/99	WIPO		
	AP					
	AQ					
	AR					
	AS					
	AT					
	AU					
	AV					

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)

	AW	C. W. TANG, et al., Applied Physics Letter, Vol. 51, No. 12, pgs. 913-915, XP-000565272, "ORGANIC ELECTROLUMINESCENT DIODES", September 21, 1987
	AX	A. HAUGENEDER, et al., Journal of Applied Physics, Vol. 85, No. 2, pgs. 1124-1130, XP-000902019, "NONLINEAR EMISSION AND RECOMBINATION IN CONJUGATED POLYMER WAVEGUIDES", January 15, 1999
	AY	
	AZ	☐ Additional References sheet(s) attached

Examiner — Date Considered

*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Europäisches Patentamt
Zweigstelle in Den Haag
Recherchenabteilung

European Patent Office
Branch at The Hague
Search Division

Office européen des brevets
Département à La Haye
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AvK | Sg | W | Da | Hi | HPJ | ME | TW | JH | KB
10. JUNI 2003
CS | K | F 5.7 03

Datum/Date
05. 06. 03

Zeichen/Ref./Réf.	Anmeldung Nr./Application No./Demande n°.//Patent Nr./Patent No./Brevet n°
00282ep/TW/be	00124496.1-2214/

Anmelder/Applicant/Demandeur//Patentinhaber/Proprietor/Titulaire
Matsushita Electric Works, Ltd., et al

COMMUNICATION

The European Patent Office herewith transmits the partial European search report under Rule 46(1) EPC relating to the above-mentioned European patent application.

Copies of the documents cited in the search report are enclosed.

The applicant's attention is drawn to the following:

The search Division informs the applicant that if the European search report is also to cover inventions other than the invention first mentioned in the claims, a further search fee must be paid for each of these inventions, within ONE MONTH after notification of this communication.

If the application has been filed up to 30 June 1999, the search fee in force before 01 July 1999 (EUR 869,--) or the equivalent applicable on the date of payment is payable.
This applies also to the search fees requested under Rule 46(1) EPC.
See also OJ EPO 06/1999, 405.

☐ The abstract was modified by the Search Division and the definitive text is attached to the present communication.

☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

Note to users of the automatic debiting procedure:

Unless the EPO receives prior instructions to the contrary, the search fee(s) will be debited on the last day of the period for payment. For further details see the Arrangements for the automatic debiting procedure, Supplement to OJ EPO 02/1999.

REGISTERED LETTER

European Patent Office

PARTIAL EUROPEAN SEARCH REPORT

under Rule 46, paragraph 1 of the European Patent Convention

Application Number EP 00 12 4496

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 313 485 A (HAMIL ROY A ET AL) 17 May 1994 (1994-05-17)	12	H01L31/0224 H01L33/00
A	* column 7, lines 27-41; column 8, lines 28-55; column 9, line 33 - column 10, line 25; column 13 line 35 - column 14, line 47; column 15, lines 38-47 * * claims 3-10, 17, 21, 26, 27 *	20	H01S5/02 G02F1/1343
A	TANG C W ET AL: "ORGANIC ELECTROLUMINESCENT DIODES" APPLIED PHYSICS LETTERS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 51, no. 12, 21 September 1987 (1987-09-21), pages 913-915, XP000565272 ISSN: 0003-6951 * page 913, left-hand column, paragraph 4 - right-hand column, paragraph 1; figure 1 *	1-10	

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

H05B
H01S
H01L
G02F

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to severalinventions or groups of inventions, namely:

see sheet B

The present partial European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.

Place of search	Date of completion of the search	Examiner
MUNICH	23 May 2003	Riechel, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C27)

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	HAUGENEDER A ET AL: "NONLINEAR EMISSION AND RECOMBINATION IN CONJUGATED POLYMER WAVEGUIDES" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 85, no. 2, 15 January 1999 (1999-01-15), pages 1124-1130, XP000902019 ISSN: 0021-8979 * page 1124, right-hand column, paragraph 3 - page 1125, right-hand column, paragraph 1; figure 1 *	1-10, 12-16	
A	US 3 573 529 A (TOMII KAORU) 6 April 1971 (1971-04-06) * the whole document *	1-16,20	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	WO 99 04312 A (KONINKL PHILIPS ELECTRONICS NV ;PHILIPS SVENSKA AB (SE)) 28 January 1999 (1999-01-28) * page 6, line 20 - page 9, line 7; figure 1 *	1-16,20, 21	
A	US 5 807 607 A (SMITH DOUGLAS M ET AL) 15 September 1998 (1998-09-15) * abstract; claims 6,29; figures 6,7 *	1-16,20, 21	
A	US 5 221 364 A (HOTALING STEVEN P) 22 June 1993 (1993-06-22) * column 5, line 35 - column 6, line 10; figure 2 *	1-16,21	
A,D	US 5 830 387 A (UEGAKI YURIKO ET AL) 3 November 1998 (1998-11-03) * the whole document *	8	

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filed 3/2/01

4

EPO FORM 1503 03.82 (P04C10)

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	US 4 849 673 A (WERRING NORMAN J ET AL) 18 July 1989 (1989-07-18) * column 1, line 7 - line 33; figure 1 *	11	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

4

EPO FORM 1503 03.82 (P04C10)

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 12 4496

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-16,20,21

   A luminous layer is (or can be) applied on top of a substrate which comprises a separate low refractive index member having a refractive index greater than 1.0 and not greater than 1.30, thereby increasing the extraction efficiency of light generated in the luminous layer.

2. Claims: 17-20,22

   Particles of a luminescent material are dispersed in thin film of a low refractive index material.

The features of claim 12 are known (see X-document in the European Search Report). Organic and inorganic light-emitting devices are known from prior art (see first 3 A-documents in the European Search Report). The use of an intermediate layer having a lower refractive index than the transparent substrate thereby reducing the divergence angle of the luminescent light is also known from prior art (see US 3,573,529 cited in the European Search Report). The special technical features of claims 1, 9, 13 and 21 representing the contribution over the prior art are as follows:

Claim 1: a low refractive index member having a refractive index greater than 1.0 and not greater than 1.30 is in contact with the electrically conductive transparent film.

Claims 9,13,21: A luminous layer is applied on top of a substrate comprising a separate low refractive index member which has a refractive index greater than 1.0 and not greater than 1.30.

Neither these nor any corresponding technical features are present in claims 17 and 22, where luminescent particles are distributed within a thin film of a low refractive index material.

Hence it is considered that the following separate inventions are not so linked as to form a single general inventive concept.

1. Claims 1-16, 20, 21
2. Claims 17-20, 22

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 12 4496

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-05-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5313485 A	17-05-1994	NONE	
US 3573529 A	06-04-1971	JP 49018032 B	07-05-1974
		DE 1931404 A1	23-04-1970
		FR 2019633 A5	03-07-1970
		GB 1260009 A	12-01-1972
		NL 6909714 A ,B	06-04-1970
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		WO 9904312 A1	28-01-1999
		JP 2001504602 T	03-04-2001
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US 5830387 A	03-11-1998	WO 9316125 A1	19-08-1993
		DE 69219599 D1	12-06-1997
		DE 69219599 T2	11-09-1997
		EP 0585456 A1	09-03-1994
US 4849673 A	18-07-1989	CN 86105371 A	04-03-1987
		EP 0219940 A1	29-04-1987
		JP 62061293 A	17-03-1987